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13. ABSTRACT (Maximum 200 words) The problem studied was the detection of sub-wavelength detail by scanning near-field microscopy, using a vibrating knife-edge/stylus rather than an aperture probe. A related problem was phase detection of an optical field by such scanning, not necessarily in the sub-wavelength region. (continued on reverse side)				
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MOST IMPORTANT RESULTS

1. Demonstration of one-dimensional principle of operation.
2. Demonstration of non sub-wave length two-dimensional microscope with vibrating knife edge corner.
3. Demonstration of non sub-wave length two-dimensional tomographic microscope with vibrating knife edge.
4. Analysis and simulation of evanescent wave to plane wave conversion.
5. Analysis and demonstration of phase measuring properties of one-dimensional vibrating knife edge microscope.

FINAL TECHNICAL REPORT

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Near Field Optical Microscopy Using a Vibrating Knife Edge or Stylus

Principal Investigator: Adrian Korpel, University of Iowa

PROBLEM STUDIED

The problem studied was the detection of sub-wavelength detail by scanning near-field microscopy, using a vibrating knife-edge/stylus rather than an aperture probe. A related problem was phase detection of an optical field by such scanning, not necessarily in the sub-wavelength region.

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PUBLICATIONS

1. Korpel, A., Samson, C. and Feldbush, K., " Two-dimensional operation of a scanning optical microscope using a knife edge corner.", Int. Jnl. of Im. Syst. and Technol., 4, 207-213, 1992.
2. Korpel, A., Samson, C. and Feldbush, K., "Progress in vibrating stylus near field optical microscopy. ", Proc. Workshop on Near Field Optics, Arc et Senans, France, October 1992, p. 399-406

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4. S.Samson, A.Korpel and H.S.Snyder, "Conversion of propagating waves by vibrating knife edge,' Int. Jnl. Im. Syst. and Technology , in press.
5. Adrian Korpel and Holly Snyder "Coherence properties of vibrating knife edge field sampling." In preparation.

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